Space Weather Forecast

Issued on Monday, 24 October 2022 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Geomagnetic Storms on 24 and 25 October.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity over the past 24 hours has been Low, with three Common-class flares from a small but developing region in the southeast quadrant. A further developing region in the southwest quadrant has been relatively inactive. Two remaining regions are small and benign. A CME (coronal mass ejection) was observed leaving the southwest quadrant during 23 October and will be analysed once further imagery becomes available.

Solar Wind / Geomagnetic Activity: The solar wind speeds started at slightly elevated levels, but increased to mainly elevated levels as the Earth moved into a region of faster solar winds. Total magnetic field strength was mainly moderate, with the north-south component, generally varying weakly, but with a moderate negative peak. Geomagnetic activity was Unsettled for much of the period, but was Active for the final three intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be mainly Low or Very Low, with an increasing risk of Moderate class flares later in the period.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs have been observed, although one potential CME will be analysed once further imagery becomes available. The current fast solar wind is expected to continue at elevated levels through 24 October and perhaps 25 October, perhaps peaking at strong values. A decline in speeds is then forecast from later on 25 October through the remainder of the period. Geomagnetic activity is expected to be mainly Unsettled to Active on 24 October, with a chance of G1/Minor Storms. There is further risk of G1/Minor Storms on 25 October, resulting in a rapidly decreasing risk from later on 25 October, with activity becoming mainly Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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